ABSTRACT

A new class of visible wavelength fluorescent calcium indicators with the BAPTA-like portion rendered zwitterionic by introduction of amine and carboxylic groups. "Fluo" compounds generally function with no extra ionized groups. The modified BAPTA moiety confers new properties while retaining ion selectivity and pH insensitivity. The dyes demonstrate reduced cell leakage and improved ability to study calcium near the cell membrane and preserve the fluorescent properties of "fluo" dyes. The modifications include (a) piperazinoacetic acid XIII for the leakage resistance (FLUO-LR), (b) dodecylpiperazine XIII for a near membrane indicator (FLUO-MOMO, FLUO-NOMO amphipathic "fluo" indicators which bind to cellular membranes and respond to calcium near the membrane), and (c) a propionic acid XII for general leakage resistance -FLUO-LOJO, FLUO-KOJO "fluo" indicators with an extra charge that enables them to resist leakage).